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ABSTRACT

A report is presented of a comparative investigation of a decentralized and a centralized school facility. Comparative data are provided regarding costs of the facilities, amount of educational area provided by the facilities, and types of educational areas provided. Evaluative comments are included regarding cost savings versus educational performance of the facilities. (FS)

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INVESTIGATION NO. 3

DECENTRALIZED SCHOOL vs. CENTRALIZED SCHOOL

BY

C. HERBERT PASEUR

JULY 1960

EF 001 010

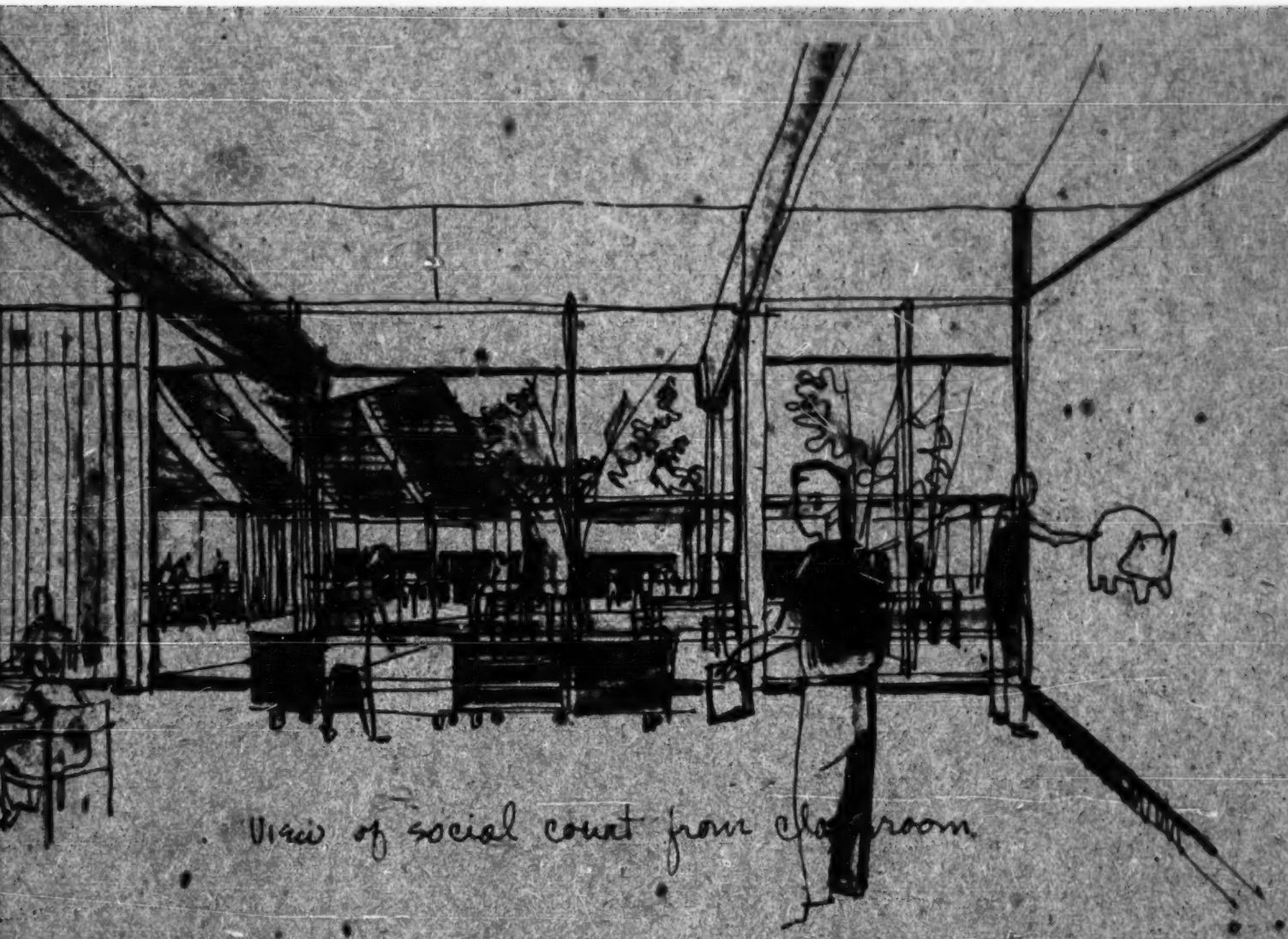
WHY THIS REPORT

CRS has always been research minded. This attitude stemmed from close association with the Texas Engineering Experiment Station.

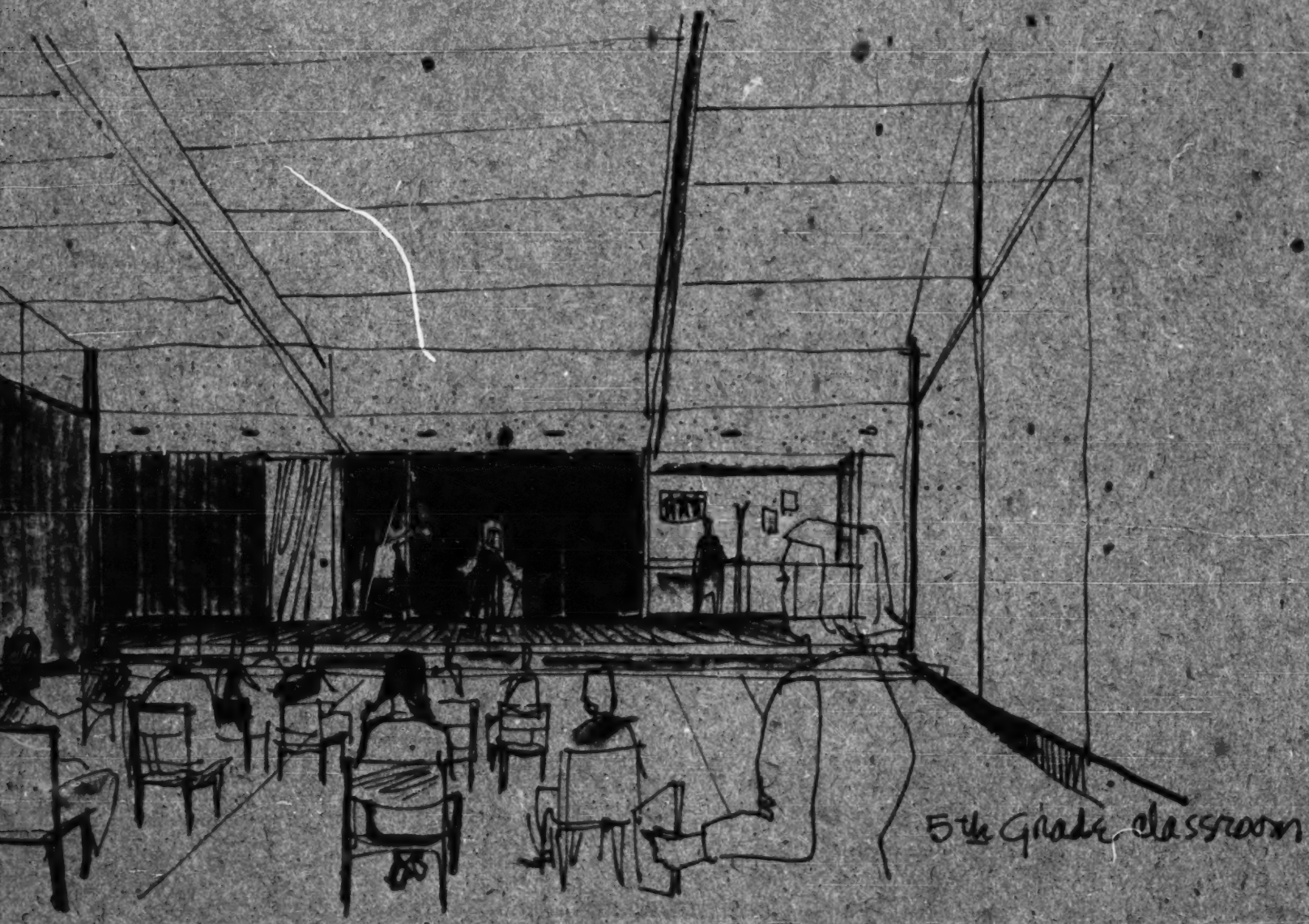
As far back as 1952, the firm began sharing its research reports. This series was called "research-architecture." In 1954, CRS was commissioned by the American School and University to prepare a second series of research reports. These reports were widely distributed in the hope of improving schoolhouses of America. A third series called INVESTIGATIONS, was initiated in 1960.

This report is one of the latest series. Some of these INVESTIGATIONS involve actual research, while others represent current thoughts of some CRS staff members. There will also be times when guest professionals are brought in to contribute to the series. INVESTIGATIONS will cover various areas of architecture.

CRS hopes that this report will in some small way help our clients and professional friends achieve a better environment for themselves and their neighbors.



View of social court from classroom



5th Grade classroom

DECENTRALIZED SCHOOL VS. CENTRALIZED SCHOOL

IN 1816 THOMAS JEFFERSON PROPOSED "...INSTEAD OF ONE IMMENSE BUILDING, TO HAVE A SMALL ONE FOR EVERY PROFESSORSHIP, ARRANGED AT PROPER DISTANCES AROUND A SQUARE, TO ADMIT OF EXTENSIONS, CONNECTED BY A PIAZZA, SO THAT THEY MAY GO DRY FROM ONE SCHOOL TO ANOTHER."*

THE FIRST REACTION TO THIS UNIQUE CONCEPT WAS PROBABLY A BATTERY OF QUESTIONS: "BUT, WON'T IT COST MORE?" "WHAT ABOUT ADDITIONAL OUTSIDE WALLS?" "WILL THIS REQUIRE MORE SERVICE FACILITIES?".

NOW, 144 YEARS LATER, THE SAME QUESTIONS ARE ASKED WHEN ARCHITECTS AND EDUCATORS PROPOSE SCHOOLS THAT HAVE A NUMBER OF SMALL BUILDINGS INSTEAD OF ONE LARGE ONE.

Elusive Answers to Perennial Questions

AN ACCURATE ANSWER TO THE QUESTION OF WHETHER A DECENTRALIZED SCHOOL COSTS MORE OR LESS THAN A CENTRALIZED SCHOOL IS MOST ELUSIVE. SITES DIFFER, EDUCATIONAL PROGRAMS DIFFER, CLIMATIC CONDITIONS DIFFER, TIMES OF LETTINGS DIFFER, AND THE CONSTRUCTION PROFICIENCY OF THE VARIOUS CONTRACTORS DIFFER. SO MOST ATTEMPTS TO COMPARE THE COST OF THE DECENTRALIZED SCHOOL WITH THE COST OF THE CENTRALIZED SCHOOL HAVE BEEN EITHER PURE CONJECTURE OR INCOMPLETE ANALYSIS.

Unique Opportunity

OUR FIRM HAS BEEN INVOLVED IN AN UNUSUAL SITUATION ENABLING US TO MAKE A COMPARISON THAT WILL RESULT IN AT LEAST A PARTIAL ANSWER TO THIS QUESTION. WE HAVE UNDER CONSTRUCTION TWO INTERMEDIATE SCHOOLS HOUSING GRADES 5 THROUGH 8. THEY ARE BEING BUILT FOR THE SAGINAW TOWNSHIP COMMUNITY SCHOOLS

*MUMFORD, LEWIS, THE SOUTH IN ARCHITECTURE, HARCOURT, BRACE AND COMPANY, P. 64, 1941.

UNLOADING

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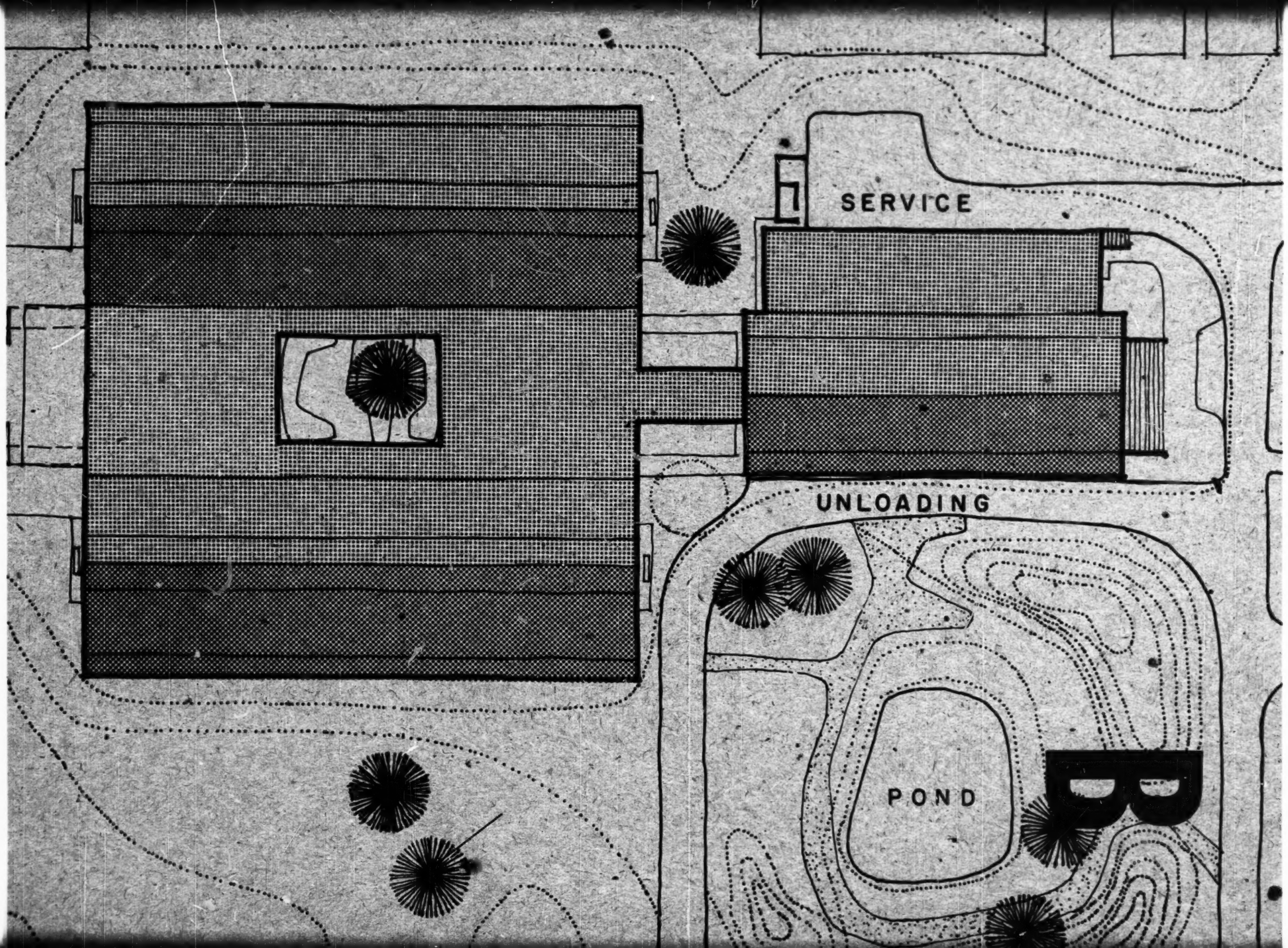
SERVICE
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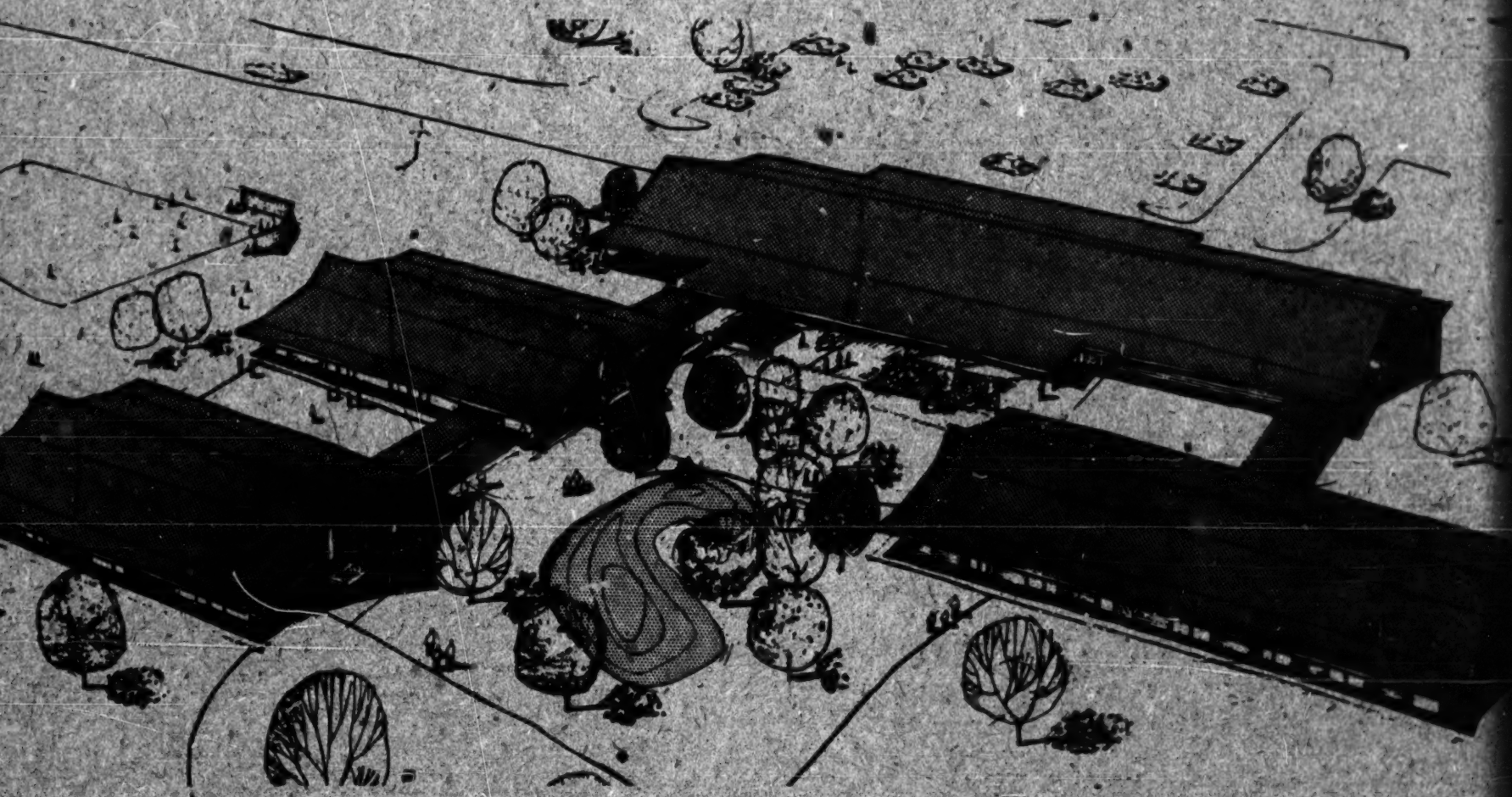
IN SAGINAW, MICHIGAN. WE HAVE BEEN FORTUNATE TO HAVE WORKED WITH A MOST ABLE SCHOOL ADMINISTRATOR, GEORGE MILLS, WITH A DEEP PHILOSOPHY OF EDUCATION. CONSEQUENTLY, EACH OF THE TWO SCHOOLS IS A VERY EFFICIENT EDUCATIONAL TOOL.

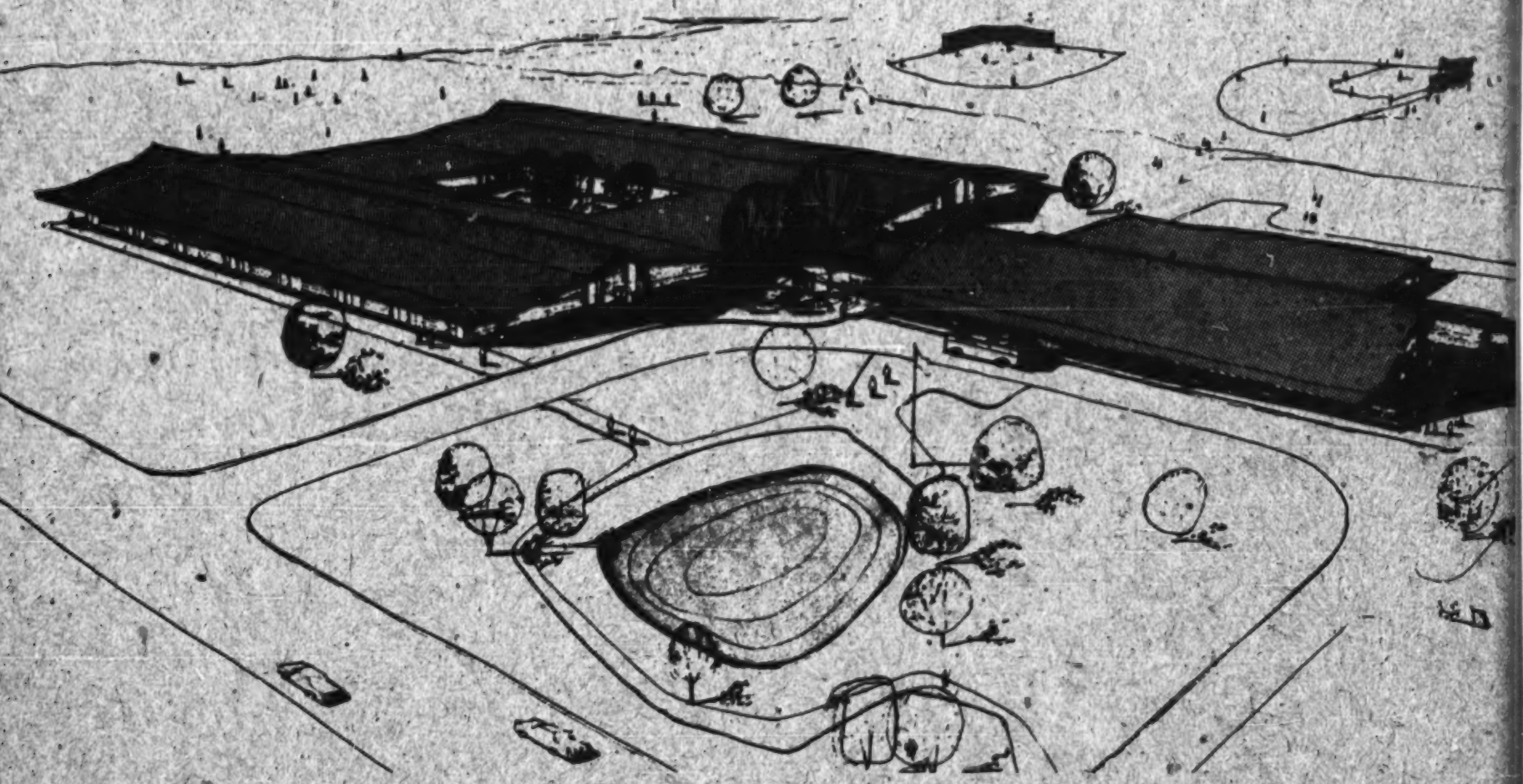


FOR IDENTIFICATION PURPOSES WE WILL REFER TO THE ACCOMPANYING SKETCHES OF THE SCHOOLS AS SCHOOLS A AND B. SCHOOL A HAS THE DECENTRALIZED PLAN AND IS LOCATED IN THE NORTH OF THE SCHOOL DISTRICT. SCHOOL B, LOCATED IN THE SOUTH PART OF THE SCHOOL DISTRICT HAS THE MORE COMPACT OR CENTRALIZED PLAN.

BOTH SCHOOLS WERE LET ON MARCH 15, 1960, TO THE SAME CONTRACTOR. BOTH SCHOOLS, ALTHOUGH DIFFERENT IN GEOMETRIC LAYOUT, USE THE SAME TYPE STRUCTURAL, MECHANICAL AND ELECTRICAL SYSTEMS, MATERIALS AND CONSTRUCTION DETAILS. BOTH SCHOOLS ARE ON LEVEL SITES AND HAVE APPROXIMATELY THE SAME SOIL CONDITION. FURTHERMORE, BOTH SCHOOLS HAVE EXACTLY THE SAME EDUCATIONAL PROGRAM AND CONSEQUENTLY THE SAME SPACE REQUIREMENTS.

EDUCATIONAL PREFERENCE

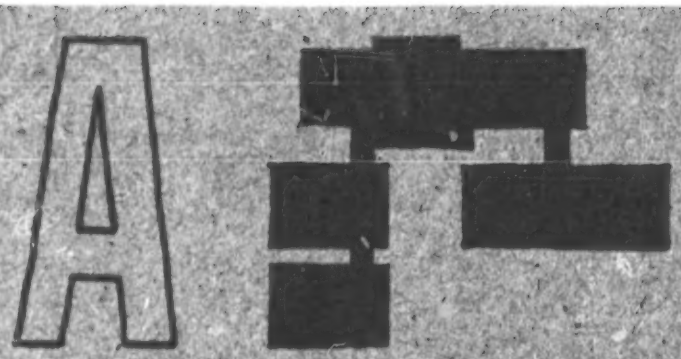
ONE GREAT DIFFERENCE IS THAT THE SITE FOR SCHOOL B IS CONSIDERABLY SMALLER, HAVING ONLY 17.5 ACRES IN COMPARISON TO 32.1 ACRES FOR SCHOOL A. THIS IS REASON ENOUGH TO EXPLAIN WHY THE ONE SCHOOL MUST BE COMPACT. THERE, ARE, HOWEVER, MANY OTHER EDUCATIONAL REASONS FOR HAVING TWO DISTINCT TYPES OF PLANS IN THIS ONE COMMUNITY. FOR EXAMPLE, SOME EDUCATORS ARE CONVINCED



THAT A DECENTRALIZED PLAN IS NECESSARY TO TAKE THE STING OUT OF MASS EDUCATION. OTHERS FEEL THAT WHEN A LARGE SCHOOL IS HOUSED IN ONE BIG BUILDING, THE HALLS BECOME SO CROWDED THAT DISCIPLINE PROBLEMS ARE CREATED. STILL OTHER EDUCATORS FEEL THAT IT IS A LOT EASIER TO EDUCATE THE INDIVIDUAL IF SMALLER HOUSING UNITS ARE USED.

THERE ARE ALSO JUST AS MANY ARGUMENTS FOR THE MORE CONVENTIONAL COMPACT PLAN, BUT THIS INVESTIGATION CONCERNS ITSELF ONLY WITH THE TANGIBLE FACTS OF COST AND PHYSICAL PLANT CHARACTERISTICS.

THE FOLLOWING CHART SHOWS A COMPARATIVE ANALYSIS OF THE TWO BUILDINGS.



ITEMS TO BE COMPARED	DECENTRALIZED – NORTH
COST DATA	
CONSTRUCTION COST	$ 879,759
COST PER PUPIL	1,353
SQUARE FOOT COST	$ 14.10
EQUIPMENT COST	35,429
SITE DEVELOPMENT COST	46,785
TOTAL LOW BID	961,973
TOTAL HIGH BID	1,031,667
TOTAL AVERAGE BID	996,271
EDUCATION	
NET EDUCATION AREA	37,888 Sq. Ft.
PUPIL CAPACITY	650
EQUIVALENT AREA PER PUPIL	96.1 Sq. Ft.
NET EDUCATION AREA PER PUPIL	58.3 Sq. Ft.
GEOMETRY	
ENCLOSED AREA	54,627 Sq. Ft.
COVERED AREA	15,628 Sq. Ft.
EQUIVALENT AREA	62,441 Sq. Ft.
PERIMETER	2,111 Ft.
CORNERS	34
NON-EDUCATION SPACE	16,739 Sq. Ft.

CENTRALIZED – SOUTH	% OF DIFFERENCE	COMMENTS	NO
$ 846,805.	+3.8		
1,303	+3.8	BASED ON 10	
$ 13.30	+5.9	BASED ON 1 & 15	
34,691	+2.1	INCLUDED IN BID	
37,192	+26.0	INCLUDED IN BID	
918,688	+4.7	BASED ON 1, 4 & 5	
1,009,600	+2.0	INCLUDES 1, 4 & 5	
960,025	+3.8	INCLUDES 1, 4 & 5	
38,010 SQ. FT.	-0.3	LINE 13 LESS LINE 18	
650	0		
98.0 SQ. FT.	-1.9	BASED ON 15	
58.5 SQ. FT.	-0.3	BASED ON 9 & 10	
56,339 SQ. FT.	-3.0		
14,636 SQ. FT.	+6.8		
63,657 SQ. FT.	-1.9	A.I.A. METHOD	
1,663 FT.	+27.0		
24	+42.0		
118,329 SQ. FT.	-8.7	ENCLOSED SPACE ONLY	

Other Considerations

If the price tag were the only consideration, the centralized school would obviously be the best bargain, with a savings of 3.8% over the decentralized school. Before buying the centralized concept completely, there are a few things you should know that you may not have noticed in the chart. Also, there are a few items of interest not shown in the chart. Consider, therefore, the following:

- The decentralized school has less space to heat.
- But it has 27% more outside wall area to increase the heat loss.
- The decentralized school takes a little less gross space to provide the same net education area.
- Although the decentralized school required 26% more site development for the flat sites, this figure might have been reversed had the sites been on steep grades, necessitating excessive fill for the deep spaces in the centralized school.
- It is difficult to explain why the equipment cost was 2% more for the decentralized schools, since the facilities are the same.
- Also, it is difficult to see the reason for the higher unit cost of the structure of the decentralized school, since the design and quality of the laminated wood beams and decking are equal.
- An examination of the material breakdown also revealed a similar difference in lighting fixtures.
- Unquestionably the simpler geometry accounted for much of the savings of the centralized school over the decentralized school, but this analysis does not tell exactly how much.

First Cost Savings VS. Educational Performance

Although the difference in the cost of Schools A and B is a relatively low percentage, it cannot be ignored. A percentage of 3.8 represents a lot of money. But the big question is: What penalties, if any, are imposed on the teachers and children when we accept the savings? We know what we're buying as far as static buildings go, but we won't know until the teachers and children use the buildings, what we are buying in the way of an educational machine.

In order to get a total answer to the question of which is the more economical, the centralized plan or the decentralized plan, one must approach the problem through the schools' educational performances, as well as through construction costs. We believe that in a year or so, after the pupils and teachers have moved into these two buildings, Superintendent George Mills and his faculty can tell us which school gives more for the money in educational performance. Then we shall have the total answer to the question at hand in this particular analysis.

Summary

The decentralized school cost 3.8% more, but we do not have conclusive evidence at this time to say that the cost difference should be the determining factor for planning future schools. Further evaluation may show that the small additional cost may buy a bargain in increased educational performance.

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